

CLAIMS

We claim:

1. A method for compressing image data, comprising the steps of:
decomposing the image data into code-blocks of coefficients using a transform, each code-block comprising a plurality of bit-planes from a most significant bit-plane to a least significant bit-plane; and
forming an encoded bit-stream by coding bit-planes of coefficient data in the code-blocks according to an arithmetic coding scheme in order to form an encoded bit-stream;
wherein coefficient data from at least one bit-plane is included in the encoded bit-stream without arithmetic coding.
2. A method as claimed in claim 1, wherein the arithmetic coding scheme operates in a plurality of coding passes, and wherein at least one of the arithmetic coding passes for the coefficient data from said at least one bit-plane is not performed during the image data compression.
3. A method as claimed in claim 2, wherein coefficient data from bit-planes
$$p < p_0 - K$$
are written directly into the encoded bit-stream without arithmetic coding, wherein p_0 denotes the most significant bit-plane of the code block in which any sample therein becomes contextually significant during arithmetic coding and K is an integer parameter.

4. A method as claimed in claim 3, wherein $K = 3$.
5. A method as claimed in claim 1, wherein the method for compressing image data is based on embedded block coding with optimized truncation and employs a Wavelet transform.
6. An image data compression system, comprising:
a decomposition processor which decomposes the image data into code-blocks of coefficients using a transform, each code-block comprising a plurality of bit-planes from a most significant bit-plane to a least significant bit-plane; and
an arithmetic coder coupled to the decomposition processor which forms an encoded bit-stream by coding bit-planes of coefficient data in the code-blocks according to an arithmetic coding scheme;
wherein the arithmetic coder is constructed such that coefficient data from at least one bit-plane is not subjected to said arithmetic coding scheme so as to be included in the encoded bit-stream without arithmetic coding.
7. An image data compression system as claimed in claim 6, wherein the arithmetic coding scheme operates in a plurality of coding passes, and wherein at least one of the arithmetic coding passes is bypassed for the coefficient data from said at least one bit-plane during the image data compression.
8. An image data compression system as claimed in claim 7, wherein the arithmetic coder operates such that coefficient data from bit-planes

$$p < p_0 - K$$

are written directly into the encoded bit-stream without arithmetic coding, wherein p_0 denotes the most significant bit-plane of the code block in which any sample therein becomes contextually significant during arithmetic coding and K is an integer parameter.

9. An image data compression system as claimed in claim 8, wherein $K = 3$.

10. An image data compression system as claimed in claim 6, wherein the arithmetic coder is based on embedded block coding with optimized truncation and the decomposition processor employs a Wavelet transform.

11. A compressed image data bit-stream formed from transform coefficients of image data, wherein the bit-stream data structure includes arithmetically coded data interleaved with raw transform coefficient data.